

## CLAIMS:

1. A method of manufacturing nanowires, comprising the steps of  
- providing a patterned etching mask at a surface of a semiconductor substrate, and  
- etching the semiconductor substrate so as to form nanowires in a direction substantially perpendicular to the surface of the semiconductor substrate,

5 characterized in that

- the semiconductor substrate comprises a first layer of a first material and a second layer of a second material, which layers adjoin one another; and  
- etching takes place through the first and the second layer for forming the nanowires such that the nanowires comprise a first region of the first material and a second region of the  
10 second material.

2. A method as claimed in claim 1, characterized in that the first and the second material comprise the same semiconductor but different dopings.

15 3. A method as claimed in claim 1, characterized in that the second layer is formed by epitaxial growth of the second material on the first layer.

4. A method as claimed in claim 3, characterized in that the first material comprises Si, and the second material is chosen from the group comprising SiC, SiGe, and  
20 SiGeC.

5. A method as claimed in claim 1, characterized in that

- a third layer of a third material is present in the semiconductor substrate,  
- the second layer lies sandwiched between the first layer and the third layer and has a thickness of at most 100 nm, and  
25 - etching takes place through the first, the second, and the third layer for forming the nanowires, such that the nanowires comprise the first region, the second region, and a third region composed of the third material.

6. A method as claimed in claim 5, characterized in that the third material is identical to the first material.

7. A method as claimed in any of the claims 1-6, wherein the nanowires are  
5 removed from the substrate after the etching of the substrate.

8. A nanowire provided with a first region of a first material and a second region of a second material, which first and second materials are different, while said first and second region are mutually adjoining, wherein said nanowire is obtainable by the method as  
10 claimed in any one of the claims 1 to 7.

9. An electronic device provided with a first and a second electrode which are interconnected by one or several nanowires, characterized in that the nanowire of claim 8 is present between the first and the second electrode.